

# **APPENDIX A**

## **CHECKLIST**

## **VOLUNTARY CLEAN-UP AND REDEVELOPMENT ACT CHECKLIST AND INFORMATION COMPARISON TABLE**

This table provides a checklist of information that may be included in a Voluntary Clean-up Program application. Although not all information requirements apply to all sites, the applicant should review this list carefully and include in the application any information that is relevant to the property in question. The table should be submitted in the application, with the page numbers in the application where this information can be found inserted into the last column. This is not an application requirement, but it does greatly assist the reviewer.

This table may also be used to compare the information normally contained in Phase I and Phase II Environmental Audits, with the requirements of the Voluntary Clean-up Program application. Since these audits are commonly performed, the table will assist owners in determining any additional information that may be needed, if you have already performed a Phase I or Phase II audit.

### **DIRECTIONS FOR COMPARISON TABLE INTERPRETATION**

The table that follows is organized like the one below.

P I	P II	VC	I. General Information	Page
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The first three columns provide the comparison between the information requirements of Phase I (PI) and Phase II (P II) Environmental Audits and the Voluntary Clean-up Program application (VC). In each column you will either see a blank space, a zero (0), a plus sign (+) or a minus sign (-). These can be interpreted as follows:

- + means requirements are more detailed than other documents
- means requirements are less detailed than other documents
- 0 means requirements are similar to other documents

a blank means that the requirement does not exist for that document

So, for example, if you saw a (+) in the VC column, it means that there are additional information requirements for the Voluntary Clean-up Program application in comparison to the audit reports for that item. If there was a (0) in the VC column, then the information contained in the Phase I or Phase II audit is adequate for the Voluntary Clean-up Program application.

The fourth column provides the checklist of information items required in the Voluntary Clean-up Program application.

The fifth column provides a place for you to insert the page number from the Voluntary Clean-up Program application that pertains to this informational item. If the applicant fills this portion out and returns the table with the application, it greatly assists the reviewer in finding information within the application.



## VOLUNTARY CLEAN-UP, ASTM PHASE I, ASTM PHASE II COMPARISON

P I	P II	VC	I. GENERAL INFORMATION	Page
0	0	0	Name and address of owner	COVER
0	0	0	Contact person and phone number	LETTER
0	0	0	Location of property	3
-	+	+	Type and source of contamination	6
		+	Voluntary Clean-up (VC) or No Action Determination (NAD)	
0		0	Current Land Use	4
		+	Proposed Land Use. Proposed future land use is not covered in a Phase I or II assessment. A voluntary clean-up approval is contingent upon this item.	5

P I	P II	VC	II. PROGRAM INCLUSION	Page
-		+	Is the applicant the owner of the property for the submitted VC or NAD? In a Phase I assessment, the owner is not always the party preparing the assessment. The Voluntary Clean-up Program requires owner/designated representative to complete the submittal.	1
-		+	Is the property submitted for the VC or NAD the subject of corrective action under orders or agreements issued pursuant to provisions of Part 3 of Article 15 of this Title or the federal RCRA 1976 as amended? Although Phase I assessments review state records for RCRA corrective actions, the Voluntary Clean-up Program requires details of a corrective action for an eligibility determination.	2
-		+	Is the property submitted for the VC or NAD subject to an order issued by or an agreement with the Water Quality Control Division pursuant to Part 6 of Article 8 of this Title? Although Phase I assessments review state records, detail is not discussed. If Water Quality has issued a permit, the applicant is ineligible.	2
-		+	Is the property submitted for the VC or NAD a facility that has or should have a permit or interim status pursuant to Part 3 of Article 15 of this Title for treatment, storage or disposal of hazardous waste? Although Phase I assessments review state records, detail is not discussed. For the Voluntary Clean-up Program, details of permits or interim status are necessary for an eligibility determination. Based on the site specifics of the permitted facility, the applicant may qualify for the program.	2
-		+	Is the property submitted for the VC or NAD subject to the provisions of Part 5 of Article 20 of Title 8 (Underground Storage Tanks) CRS or of Article 18 of this Title (RCRA)? Although Phase I assessments review state records, detail is not discussed. For the Voluntary Clean-up Program details of Underground Storage Tank or RCRA requirements are necessary to make an evaluation. In some cases (e.g., tanks were removed prior to 12/22/88), the applicant may be eligible for the program.	2
-		+	Is the property submitted for the VC or NAD listed or proposed for listing on the National Priorities List of Superfund sites established under the federal act (CERCLA)? Although Phase I assessments review state records, detail is not discussed. For the Voluntary Clean-up Program, details of CERCLA action are necessary to make an evaluation. In some cases, the applicant may not be eligible for the program.	2



PI	PII	VC	III. ENVIRONMENTAL ASSESSMENT	Page
0	0	0	Qualified environmental professionals must submit environmental assessments. The applicant must submit documentation, in the form of a statement of qualifications or resume.	APP. F
0	0	0	The applicant should provide the address and legal description of the site and a map of appropriate scale identifying the location and size of the property.	B
0		0	The applicant should describe the operational history of the property in detail, including the most current use of the property.	4
0		0	A description of all business/activities that occupy or occupied the site as far back as record/knowledge allows.	4
-		+	A brief description of all operations that may have resulted in the release of hazardous substances or petroleum products at the site, both past and present, including the dates activities occurred at the property and dates during which the contaminants were released into the environment. Although Phase I & II assessments may reveal the release of hazardous substances or petroleum products, the exact dates and quantities may not be discussed. For the Voluntary Clean-up Program, the dates of activities, releases, etc., are necessary for an evaluation of eligibility.	6
-		+	A list of all site-specific notifications made as a result of any management activities of hazardous substances conducted at the site, including any and all Environmental Protection Agency ID numbers obtained for management of hazardous substances at the site from either the state or the Environmental Protection Agency. The Phase I assessment will reveal whether a facility has an Environmental Protection Agency ID number, but will not list the notifications made as a result of management activities of hazardous substances. This information is necessary for a Voluntary Clean-up Program evaluation.	7
0		0	A list of all notifications to county emergency response personnel for the storage of reportable quantities of hazardous substances required under Emergency Planning and Community Right-to-Know statutes.	7
0		0	A list of all notifications made to state and/or federal agencies, such as reporting of spills and/or accidental releases, including notifications to the State Oil Inspection Section (OIS) required under 8-20-506 and 507 and 25-18-104 CRS 1989 as amended and 6 CCR 1007-5 subpart 280.50 Part 3 of the OIS regulations, etc.	7
-	-	+	A list of all known hazardous substances used at the site with volume estimates and discussion of relative toxicities. A Phase I & II assessment does not require such detail, however, the hazardous substances used, volumes and toxicities are important for a VC in the overall evaluation of risk and sampling efforts.	8
-		+	A list of all wastes generated by current activities conducted at the site and manifests for shipment of hazardous wastes off site. A Phase I & II assessment does not require such detail, however, the manifest information is important for a VC evaluation, as in the above item.	8
		+	A list of all permits obtained from state or federal agencies required as a result of activities conducted at the site. A listing of all permits is beyond a Phase I or II assessment. These are important for the Voluntary Clean-up Program so the Department can evaluate what potential sources may be at the site.	NA
0		0	A brief description of the current land uses, zoning and zoning restrictions of all areas contiguous to the site.	5



P I	P II	VC	III. ENVIRONMENTAL ASSESSMENT	Page
			The applicant shall describe the physical characteristics of the site, including a map to scale, and an accompanying narrative showing and describing the following, utilizing historic knowledge as well as current data:	
0	0	0	• Topography	3
0	-	0	• All surface water bodies and waste water discharge points	3
0	-	0	• Ground water monitoring and supply wells	6
0	-	0	• Facility process units and loading docks	6
0		0	• Chemical and/or fuel transfer and pumping stations	NA
0		0	• Railroad tracks and rail car loading areas	NA
0		0	• Spill collection sumps and/or drainage collection areas	NA
0		0	• Wastewater treatment units	NA
0		0	• Surface and storm water runoff retention ponds and discharge points	3
0		0	• Building drainage or wastewater discharge points	3
0		0	• All above or below ground storage tanks	NA
0		0	• Underground or above ground piping	NA
0		0	• Air emission control scrubber units	NA
0		0	• Water cooling systems or refrigeration units	NA
0		0	• Sewer lines	NA
0		0	• French drain system	NA
0		0	• Water recovery sumps and building foundations	NA
0		0	• Surface impoundments	NA
0		0	• Waste storage and/or disposal areas/pits, landfills	4
0		0	• Chemical or product storage areas	NA
0		0	• Leach fields	NA
0		0	• Dry wells or waste disposal sumps	NA
			If ground water contamination exists or the release has the potential to impact ground water, the applicant should provide the following information for areas within a one-half mile radius of the site:	
	0	0	• The state engineers office listing of all wells within one-half mile radius of the site, together with a map to scale showing the locations of these wells.	Fig 6
	0	0	• Documentation of due diligence in verifying the presence or absence of unregistered wells supplying ground water for domestic use, when the potential for such wells is deemed likely as in older residential neighborhoods, or in rural areas.	11
	0	0	• A statement about each well within the half-mile radius of the site, stating whether the well is used as a water supply well or ground water monitoring well.	11
	0	0	• Lithologic logs for all on-site wells; copies of field log notes may be appropriate.	APP. E
	0	0	• Well construction diagrams for all on-site wells showing screened interval, casing type and construction details including gravel pack, interval, bentonite seal thickness and cemented interval.	E



P I	P II	VC	III. ENVIRONMENTAL ASSESSMENT	Page
	0	0	<ul style="list-style-type: none"> <li>Description of the current and proposed use of on-site ground water in sufficient detail to evaluate human health and environmental risk pathways. In addition, the applicant will provide a discussion of any state and/or local laws that restrict the use of onsite ground water.</li> </ul>	11
			The applicant should provide information concerning the nature and extent of any contamination and releases of hazardous substances or petroleum products that have occurred at the site, including but not limited to:	
	-	+	<ul style="list-style-type: none"> <li>Identification of the chemical nature and extent, both onsite and offsite, of contamination that has been released into soil, ground water or surface water at the property, and/or releases of substances from each of the source areas identified, including estimated volumes and concentrations of substances discharged at each area, discharge point, or leakage point as per Section 25.16.308(2)(b). Although Phase II assessments identify the nature of contamination, the extent is not always fully defined. For Voluntary Clean-up Program purposes, the source, nature, extent and estimated volumes of the release are important in the overall evaluation of risk and eligibility.</li> </ul>	6
	0	0	<ul style="list-style-type: none"> <li>A map to scale showing the depth to ground water across the site, direction and rate of ground water movement across the site using a minimum of three measuring points.</li> </ul>	Fig 2
	0	0	<ul style="list-style-type: none"> <li>A discussion of all hydraulic tests performed at the site to characterize the hydrogeologic properties of any aquifers onsite and in the area.</li> </ul>	3
	0	0	<ul style="list-style-type: none"> <li>All reports and/or correspondence, which detail site soil, ground water and/or surface water conditions at the site, including analytical laboratory reports for all samples and analyses.</li> </ul>	APP. C,D,E
	0	0	<ul style="list-style-type: none"> <li>A discussion of how all environmental samples were collected, including rationale involved in sampling locations, parameters and methodology, a description of sampling locations, sampling methodology and analytical methodology and information on well construction details and lithologic logs. All sample analyses performed and presented as part of the environmental assessment should be appropriate and sufficient to fully characterize all constituents of all contamination that may have impacted soil, air, surface water and/or ground water on the property. The applicant should use Environmental Protection Agency approved analytical methods when characterizing the soil, air, surface water and/or ground water.</li> </ul>	APP C,D,E

P I	P II	VC	IV. APPLICABLE STANDARDS/RISK DETERMINATION	Page
	-	+	The applicant should provide a description of any applicable standards/guidance (federal, state, or other) establishing acceptable concentrations of constituents in soils, surface water, or ground water, for the proposed land use. Although a Phase II assessment evaluates applicable regulations for the current land use, it does not cover the proposed land use that may be different (e.g., the current land use is industrial and the proposed land use is residential, which likely has more conservative levels for contaminant concentrations).	10



P I	P II	VC	IV. APPLICABLE STANDARDS/RISK DETERMINATION	Page
	-	+	The applicant should provide a description of the human and environmental exposure to contamination at the site based on the property's current use and any future use proposed by the property owner, including:	
	0	0	<ul style="list-style-type: none"> <li>A table or list for site contaminants indicating which media are contaminated and the estimated vertical and areal extent of contamination in each medium.</li> </ul>	TABLE 1,2,3
	-	+	<ul style="list-style-type: none"> <li>A table or list of site contaminants, indicating the maximum concentrations of each contaminant detected onsite in the area where contaminant was discharged to the environment, and/or where the worst effects of the discharge are believed to exist. A Phase II assessment will evaluate the extent of site contaminants, not the maximum point or worst effects. The Voluntary Clean-up Program requests this item so that an understanding of the source and nature of the contaminants can be made as it relates to risk.</li> </ul>	TABLE 1,2,3
	-	+	<ul style="list-style-type: none"> <li>A table or list for site contaminants indicating whether the contaminant has a promulgated state standard, the promulgated standard and the medium the standard applies to. A Phase II assessment will not necessarily compare the site contaminants with state standards. This is important to evaluate whether the remedy will meet risk-based clean-up objectives.</li> </ul>	TABLE 1,2,3
	-	+	<ul style="list-style-type: none"> <li>A description and list of potential human and/or environmental exposure pathways pertinent to the present use of the property. A risk determination is not usually completed as part of a Phase II assessment; the VC will use risk as part of the overall evaluation.</li> </ul>	10
		+	<ul style="list-style-type: none"> <li>A description and list of potential human and/or environmental exposure pathways pertinent to the future use of the property. (A risk determination is not usually completed as part of a Phase II assessment; the Voluntary Clean-up Program will use risk as noted above. Phase II assessments also do not evaluate future use of the property.)</li> </ul>	11
	-	+	<ul style="list-style-type: none"> <li>A list and map defining all source areas, areas of contamination or contaminant discharge areas. Phase II assessments do not always show source areas. The Voluntary Clean-up Program requires that these areas be defined to indicate the proximity of contaminant with respect to receptors and sampling efforts.</li> </ul>	Fig. 7
	-	+	<ul style="list-style-type: none"> <li>A discussion of contaminant mobilities, including estimates of contaminants to be transported by wind, volatilization, or dissolution in water. For those contaminants that are determined to be mobile and have the potential to migrate and contaminate the underlying ground water resources, the applicant should also evaluate the leach ability/mobility of the contaminants. This evaluation should consider, but not be limited to the following: leachability/mobility of the contamination, health-based ground water standards for the contamination; geological characteristics of the vadose zone that would enhance or restrict contaminant migration to ground water, including but not limited to grain size, fractures and carbon content; and depth to ground water. This evaluation, and any supporting documentation, should be included in the plan submitted. A Phase II assessment usually does not include a risk determination. However, the Voluntary Clean-up Program will evaluate the risk involved with the proposed clean-up in order to evaluate the application.</li> </ul>	11



PI	P II	VC	IV. APPLICABLE STANDARDS/RISK DETERMINATION	Page
		+	The applicant should then provide, using the information contained in the application, a risk-based analysis of all exposure pathways, which details how the proposed remediation will obtain acceptable risk levels. A Phase II assessment usually does not include a risk analysis, however, the Voluntary Clean-up Program requires this analysis to show that the remediation propose will attain an acceptable risk or break pathways.	11
		+	The Voluntary Clean-up Program includes remediation whereas a Phase I or II assessment does not. Usually remediation is considered a Phase III assessment. The following are the requirements for the clean-up proposal.	
		+	<ul style="list-style-type: none"> <li>A detailed description of the remediation alternative, or alternatives selected, which will be used to remove or stabilize contamination released into the environment or threatened to be released into the environment</li> </ul>	12
		+	<ul style="list-style-type: none"> <li>A map identifying areas to be remediated, the area where the remediation system will be located if it differs from the contaminated areas, the locations of confirmation samples, the locations of monitoring wells, areas where contaminated media will temporarily be stores/staged and areas where contamination will not be remediated.</li> </ul>	Fig 7
		+	<ul style="list-style-type: none"> <li>Remediation system design diagrams showing how the system will be constructed in the field.</li> </ul>	12
		+	<ul style="list-style-type: none"> <li>A remediation system operation and maintenance plan that describes, at a minimum, how the system will be operated to ensure that it functions as designed without interruptions and a sampling program that will be used to monitor its effectiveness in achieving the desired goal.</li> </ul>	12
		+	<ul style="list-style-type: none"> <li>The plan should describe the sampling program that will be used to verify that treatment of the contaminated media has resulted in attainment of the proposed clean-up goals.</li> </ul>	12
		+	<ul style="list-style-type: none"> <li>The plan should include a schedule of implementation</li> </ul>	
		+	The clean-up completion report is necessary to demonstrate that the remediation was completed according to the application. Again, since remediation is involved, the report is beyond the scope of a Phase I or II assessment. The following items should be included in the completion report.	
		+	<ul style="list-style-type: none"> <li>A final list of all site contaminants, along with the remaining concentrations, and any deviations from the original plan.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>A final list defining which media are contaminated and the estimated vertical and areal extent of contamination to each medium.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>A final list and map defining all source areas, areas of contamination or contaminant discharge areas.</li> </ul>	
			Soil Contamination: Remediation by Excavation Only:	
		+	<ul style="list-style-type: none"> <li>One confirmation sample per 500 ft<sup>2</sup> as measured at the base on the excavation OR two confirmatory samples, whichever method results in the collection of the most samples.</li> </ul>	



P I	P II	VC	IV. APPLICABLE STANDARDS/RISK DETERMINATION	Page
		+	<ul style="list-style-type: none"> <li>One composite sample from each wall of the excavation. In excavations of an irregular shape, one composite sample for every 100 lineal feet of wall. For excavations greater than 5000 ft<sup>2</sup>, preparation of a grid for randomization of sampling.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>Explanation of the sampling method in the narrative as well as any modifications to 1 and 2 above used to better characterize the remedial efforts.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>If contamination is to be left in place, an additional sample should be collected from the area of the worst contamination, as verified or with a field-sampling device.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>Depth of samples collected</li> </ul>	
		+	<ul style="list-style-type: none"> <li>Provision of waste disposal manifests</li> </ul>	
			In-Situ Soil Remediation	
		+	<ul style="list-style-type: none"> <li>Completion of a minimum of two soil borings, with at least one completed in the area identified in the site assessment as the area of highest contamination. For larger areas of contamination, one boring per 10,000 ft<sup>2</sup> of plume area.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>Completion of the borings should employ a field-screening device and borings should be logged.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>Soil sample submitted for analysis from each boring would be the sample with the highest field screening or one located at the ground water interface for each boring.</li> </ul>	
		+	Ground Water Remediation	
		+	<ul style="list-style-type: none"> <li>Field testing should include aquifer and contaminant characteristics such as gradient, partition coefficients, original contaminant levels, etc.</li> </ul>	
		+	<ul style="list-style-type: none"> <li>At each regular monitoring event, a map showing ground water flow direction, depth to ground water and sampling locations</li> </ul>	
		+	<ul style="list-style-type: none"> <li>Tabular presentation of data collected</li> </ul>	
		+	Summary of Voluntary Clean-up Program participation	
		+	Summary of field activities, remedial activities, any deviations from original plans	
		+	Pertinent figures and drawings of remedial system	
		+	Conclusions made after remedial activities are completed	